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Johns would be \$50, and to Pilley Island \$60. Similarly, very favorable terms can be obtained for other voyages, and the committee will be pleased to render all the assistance in its power in arranging the details of such excursions.

A reception to the association will be given by the Board of Trade of Washington in the parlors of the Arlington at the close of the president's address on Wednesday evening, Aug. 19.

THE CURABILITY OF PULMONARY PHTHISIS.

IN reference to the question of the curability of consumption, says Dr. T. Harris in the *Lancet* of May 2, we may recognize three classes of cases.

1. Cases of very limited tubercular disease of the lung, where the lesion is small, and is eventually replaced either by fibrous tissue and a completely calcified caseous focus. As far as our experience goes, such cases are always instances of very localized and very small foci, and the disease is never an extensive one. These cases are the only ones which can be considered as perfectly healed, and where the lesion (cicatrix or calcareous focus) which remains does not involve a risk to the possessor, such lesions, so far as we know, not being liable to set up either a local or general tuberculosis. These lesions are not unfrequently found in the lungs of persons who have died of various diseases and from injuries, but it is not known how frequently the tubercular change has been extensive enough to cause distinctive signs and symptoms of pulmonary tuberculosis. Probably the majority of the persons in whose bodies such foci of obsolete tubercle are found have at no period of their lives presented the usual signs or symptoms of consumption, the lesion having been very small.

2. Cases similar to the above, but where the remains of the tubercular disease is not at all or only imperfectly calcified. Although the physician, from the examination of the chest, and the consideration that all the symptoms of phthisis have disappeared, may regard such cases as cured, they cannot be so considered by the pathologist. The latter knows from the microscopical examination of such foci, and from the results of inoculation experiments with animals, that such foci are dangerous, and may at any time give rise to further destructive changes in the lungs or to the general miliary tuberculosis. They are cases, however, which, if the person remains under favorable conditions for preserving health, may pass on to a complete cure, and then deserve a place in Class 1.

3. Cases which run a prolonged course, often with periods when the disease remains quiescent, and which are characterized pathologically by the formation of much fibrous tissue. It is some of these cases which are so misleading to the medical man, and cause the hopes of the sufferer not only to be raised, but cause him to believe that he is cured. This feeling is a consequence of the disease having become temporarily arrested, or, as is probably more frequently the case, by its progressing extremely slowly and being associated with few physical signs and symptoms of extending disease. Very many cases of phthisis come under this heading, and it is rare for a case of chronic phthisis to be continually progressive. Nearly all such forms of the disease are associated with periods of relative good health when the disease appears to be quiescent. The fact that many cases of phthisis belong to this class renders any conclusions as to the good effects of any particular treatment so fallacious. The enthusiastic therapist is very prone to conclude that the favorable results are the consequence of the treatment adopted, and to forget that the favorable symptoms and signs may be explained as manifestations of the natural course of the disease. The history of the treatment of pulmonary tuberculosis is full of such fallacies.

From a consideration of the above classes it follows that some cases of phthisis are completely cured, but that the disease in such instances has never been a very extensive one. The majority of cases of phthisis we are compelled to consider belong to the last-mentioned classes, and consequently to be cases which often show a tendency to cure, but rarely perfectly attain that end. The tendency, however, in very many cases of phthisis is towards

arrest; and it is the evidence on this point, together with the absolute proof which we have, that in some cases a complete cure does result, that gives us encouragement to persist in treatment, and warrants us in holding out good hopes of recovery to the unfortunate sufferers in the early stages of the disease.

EXPERIMENTS ON THE FEEDING OF HOGS.

THE following is a summary of experiments made by the Illinois Experiment Station at Champaign during the years 1888, 1889, and 1890.

In eight trials in which corn only was fed, aside from salt and coal slack, pigs varying in average weight from 65 to 290 pounds and kept in pens or small lots without grass, gained at the rate of from 10.46 to 14.73 pounds per bushel (56 pounds) shelled corn, the average gain being 12.36 pounds. The rate of gain for food eaten, and the food eaten in proportion to weight, decreased after four to six weeks feeding with corn only. The corn eaten per day varied from 3.41 pounds, eaten by pigs averaging 65.58 pounds, to 10.71 pounds, eaten by pigs weighing 311 pounds. The corn eaten per day per 100 pounds live weight varied from 1.95 pounds eaten by pigs fed 84 days and averaging 207 in weight, to 5.19 pounds eaten by pigs averaging 65.58 pounds. In one case in the fourth week of pen feeding two pigs gained 3.21 pounds each per day — at the rate of 16.81 pounds per bushel of corn. This was the greatest gain per day, and was also the best rate of gain in any trial. There seemed to be no constant relation between the weight of the pigs or the season of the year, and the food eaten or the gains made.

In four trials, pigs fed all they would eat of shelled corn, with blue grass pasture, ate 4,216.5 pounds of corn and gained 905 pounds, which was at the rate of 12.04 pounds gain per bushel of corn. Pigs under like conditions, except that they were fed but half as much corn, ate 2,190 pounds of corn and gained 505 pounds, which was at the rate of 12.93 pounds per bushel. Pigs in dry lots, fed shelled corn, ate 4,207 pounds of corn and gained 790.5 pounds, which was at the rate of 10.52 pounds per bushel.

After periods varying from six to nine weeks, the pigs which had been fed a half ration of corn on pasture, were given a full feed of corn, the others being fed as before. In three trials lasting four or five weeks each, the pigs which had had a full feed of corn throughout ate 1,796 pounds of corn, and gained 329 pounds, which was at the rate of 10.11 pounds per bushel. Those which had been fed a half-feed of corn in the first part of the trials ate 2,075.5 pounds of corn in the second part, and gained 462.5 pounds, which was at the rate of 12.5 pounds per bushel. Those fed corn only ate 1,624.5 pounds of corn and gained 224 pounds, which was at the rate of 7.44 pounds per bushel.

In two trials pigs fed soaked corn ate more and gained more than those fed dry corn. In one trial they gained more, and in one less, in proportion to food eaten than those fed dry corn. The differences were not great in either case.

Two pigs in a pasture in which were three yearling steers were fed corn, gaining in 24 weeks 195 pounds. In a second trial two pigs with like conditions gained 231 pounds in 31 weeks. In neither case was the gain large. In each case the pigs at the close of the trial were in good condition for full feeding and made large gains when so fed.

A trial of apple pomace as food for pigs resulted unsatisfactorily. The pomace kept well. Chemical analysis of it showed an apparently good composition for feeding purposes; but the pigs ate very little of the pomace.

HEALTH MATTERS.

Morning Cold Baths.

IN the past few years several patients have come to me, says a medical writer in the London *Lancet*, complaining that they from time to time, especially in winter, in the early part of the day, have expectorated mucus tinged with blood. In each case there was no family history of phthisis, the temperature was normal, there were no bacilli discoverable in the sputa, there was no loss

of strength or weight, and the chest-sounds were healthy. The men, however, were not of a vigorous type, and they were all accustomed to have a cold bath summer and winter. It seemed likely, especially in winter, that the sudden application of intensely cold water to the whole surface of the skin too suddenly raised the internal blood-pressure, and hence the oozing of the blood through the walls of the capillary vessels lying beneath the lining membrane of the throat or larynx, or possibly the lungs. In any case, whatever the true explanation may be, the fact stands out that the unpleasant symptom disappeared as soon as the temperature of the icy cold water was reasonably increased. The practice of taking a cold bath is so universal nowadays that it is perhaps as well to know that although the strong man may indulge in it with unmixed benefit, it may cause in the weak man a symptom which fills him with anxiety.

Lannelongue's Treatment of Tuberculosis.

The object aimed at by this method, as stated by the *Lancet*, is to bring about a sclerosis of the tubercular tissue, whatever may be its seat. The cases thus far treated have been mainly those of surgical tuberculosis.

Experiments have shown that chloride of zinc produces a remarkable fibroid change in the normal tissues of animals; and, as might be expected, the same fibroid transformation is brought about by the same agent in morbid tissues in general, including the tubercular. This chemical compound may be said to fix the anatomical elements by killing them, for it obliterates the capillaries and smaller vessels around where it has been deposited. An inflammatory action is thus set up in the vascular walls, which narrows the calibre of the surrounding vessels for a considerable distance from the initial point. But over and above this another local change of the highest import is brought about. Very rapidly — even within a few hours — there is produced in the altered tissues, by transmigration, and probably also by cell proliferation, an enormous afflux of new anatomical elements. These young cells cause fresh cedema of the periphery of the granulation growths, and infiltrate the tubercular neoplasm to the fullest extent. From this moment the struggle sets in between the accumulated elements and the bacilli, especially between the migratory cells and the microbes, to the detriment of the latter. However it may be as to the strife between cell and bacillus, the elements of the morbid growth which the chloride of zinc had destroyed are re-absorbed slowly, and finally disappear. The young cells, on the contrary, organize with great activity, and form a firm fibrous tissue, which is met with in appreciable quantity as early as the day next after the injection.

Following the sclerosis in articular fungosities, there is produced a thickening and subsequent condensation of osseous tissue if the periosteum be involved in the reparative process, as was the case in the examples of osteo-arthritis cited by the author. The remote results, so far as it is yet possible to judge, show a marked tendency for the sclerosed elements to be replaced by a more pliable connective tissue. As a consequence, the diseased parts regain their suppleness and their form, while locomotor functions are preserved entirely, or at least to the limits present at the beginning of the treatment.

The Artificial Production of Dental Caries.

For the past year Mr. Sewill, following other experimenters in the same field, has been endeavoring to produce caries in extracted teeth; and certainly the microscopical appearances presented by the sections shown at the Odontological Society, says the *Lancet*, differed but little from those of natural caries. He found that the best mixture of organic substances for the purpose was one part of bread to eight of saliva. Meat with saliva remained alkaline, and if a small quantity of acid were added became again rapidly alkaline. Albumen, whether as white of egg or other forms, acted in the same way. Saliva and starch produced little acid, which was soon exhausted.

The teeth were immersed in the mixture in glass-stoppered bottles, and kept at a temperature of 35° to 37° C. The bottles were unstopped about once a day for examination; this, of course, admitted air, and if the mixture became putrid, it at once showed

an alkaline reaction, in which case the teeth were taken out, well washed, and the mixture renewed. The mixture became rapidly acid, and remained so (unless putrefaction to a large degree supervened) for from three to five weeks. The acids present were acetic and lactic; of the former 5 per cent and of the latter 0.5 per cent were found after three weeks. The effects upon the tissues were precisely the same, both macroscopical and microscopical, as in natural caries. As in natural caries, the decay was found to commence most readily in places where there was ill-formed enamel or flaws or fissures which allowed access to the dentine, in which tissue the caries progressed more rapidly than in enamel. Cementum resisted longer than enamel, but at length yielded, and allowed the dentine beneath to be invaded. Discoloration was often present, and it was found that carious dentine readily took up stains from such substances as are often admitted to the mouth in medicines or articles of food. Microscopically the translucent zone is well shown, also the "pipe-stems" appearance in transverse sections, and the dentinal tubes are filled with micro-organisms, just as in natural caries.

The conclusions that Mr. Sewill draws from these experiments, and from the facts that caries takes place in natural teeth which are used as artificial substitutes, are, that caries is entirely due to external agents, and that vital action in no way modifies the disease.

NOTES AND NEWS.

THE university extension work has been organized in Chicago. Cleveland, Indianapolis, Fort Wayne, and Altoona are among the latest applicants for branches.

— Accessions to the membership of the Society for the Extension of University Teaching continue to be sent in at the rate of nearly a hundred a week. The best indication of the national character of the work is found in the wide area from which these applications are received, every State in the Union being now represented on the rolls.

— The work of the St. Paul (Minn.) Academy of Science continues to meet with increasing support and encouragement. The museum is receiving many additions, its rooms being permanent and well adapted for the purpose. Persons willing or desirous of adding to its collections by loan, gift, or exchange, are invited to correspond with Professor W. F. Phelps, chairman of the committee on museum, or with Mr. C. B. Scott, curator. It is gratifying to learn that the university extension classes, organized under the auspices of the academy, and conducted by professors from the State University, from Carlton College, and other near-by points, have proven quite successful and promise much for the future.

— The heavy sentence of four years' imprisonment, in addition to fines, imposed in France recently on four persons connected with the alleged sale of the secret of melinite to an English firm gives a new turn to that strange affair. It was recently announced by the French minister of war that M. Turpin, the inventor, and Captain Triponé, the agent of the English firm, really had nothing of value to the French government to negotiate for, and that the most important part of the invention — the means of exploding melinite after it has been united with another substance in the shell — remained in the sole possession of the government. This second substance, according to the *New York Times*, is cresilite, a nitro-cresol obtained from a coal-tar product; and after two-thirds of the space in the shell has been filled with it, melinite is rammed in — a fact which sufficiently indicates that both products can be safely handled, and can be exploded only by a powerful detonator.

— In its latest report the Board of Health of the city of Boston says: "We are of the same opinion now as we were when we made our last annual report, that the large expense to the city, and the perpetual nuisance which attends the storing and handling of garbage, should be abolished by burning it in the kitchen, where it first appears as waste, and before decomposition has begun to make it offensive. By this method the only expense to be